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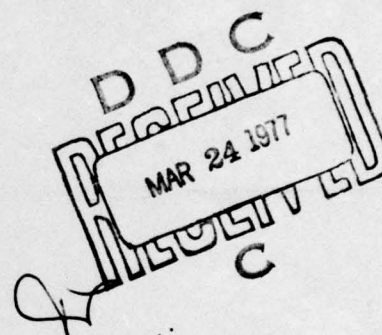
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NON-COGNITIVE CHARACTERISTICS AS A BASIS FOR  
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REPORT NO. 73-26



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NON-COGNITIVE CHARACTERISTICS AS A BASIS FOR  
GUIDANCE INTO THE NAVY PARA-MEDICAL SPECIALTIES<sup>1</sup>

Richard F. Booth and Anne L. Hoiberg<sup>2</sup>



The quantity and quality of Navy health care delivery depends to a great extent upon the performance of Hospital Corpsmen (HCs) and Dental Technicians (DTs). Unfortunately, the results of past research have revealed relatively low levels of job effectiveness within these two occupational groups. When effectiveness is defined as completion of an obligated term of service with a recommendation for reenlistment, the combined rate of effectiveness for HCs and DTs (82%) is significantly lower than the rate of effectiveness for other sailors graduated from service schools (90%). Furthermore, noneffectiveness has been found to be a consequence of medical and psychiatric difficulties much more frequently among HCs and DTs than among other service school graduates. (Flag, Goffman, and Murphy, 1969; Flag, Arthur, and Goffman, 1970) Findings such as these have suggested that there is a need for more careful screening of potential HCs and DTs in an attempt to identify those individuals predisposed to poor performance and psychiatric illness.

A large percentage of the personnel who fail to perform effectively in the HC and DT rating groups may do so simply because they entered an occupational specialty for which, on the basis of their pattern of attributes, they were ill-suited. Profiles of background and personality characteristics "typical" of job incumbents have been found in many studies to differ significantly when compared across occupations (Crites, 1969; Sunderson and Nelson, 1966). It is hypothesized, therefore, that

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young men and women who choose to become HMs and DTs can be differentiated from personnel who enter non-medical occupations on the basis of these non-cognitive characteristics.

The classification of Navy recruits into para-medical specialties should be improved significantly by developing procedures for assessing the degree of similarity between a recruit's non-cognitive characteristics and the collective characteristics of HMs and DTs already performing effectively on the job. Current Navy classification procedures rely largely upon aptitude measures for guiding individuals into the various occupational specialties. The background and personality of an individual are considered only roughly during this process and any assessments which are made by the classifier are highly subjective ones. Therefore, supplementing current classification procedures with objective non-cognitive measures should bring about an increase in the numbers of qualified recruits encouraged by classifiers to enter the para-medical specialties as well as an improvement in the accuracy of screening out prospective HMs and DTs who are predisposed to poor performance and psychiatric illness.

The study reported in this paper constitutes an exploratory investigation to establish the feasibility of this approach to classification. It was designed to identify objectively measured background and personality characteristics which discriminate in<sup>6</sup> potentially useful way between samples of effective HMs and personnel performing effectively in deck and mechanical specialties. Specifically, the objectives of this study were 1) to derive a set of background and personality items which discriminates between personnel in these two occupational groups and



2) to demonstrate that a scale developed from these items could be a useful supplement to cognitive measures already in the hands of classification personnel.

#### METHOD

##### Subjects.

The sample employed for this study included 65 Hospital Corpsmen who were attending an advanced training course at Balboa Naval Hospital, San Diego, eight Hospital Corpsmen serving on the crew of the U.S.S. Kitty Hawk, and 52 personnel serving in deck and mechanical specialties on board the U.S.S. Kitty Hawk. In order to make the comparisons on individuals who were performing effectively and who were apparently satisfied with their line of work, only sailors who had reenlisted at least once were sampled.

##### Measures.

Two questionnaires were constructed for the purposes of this study. The Personal History Inventory (PHI) contained 225 personality items drawn from a wide range of tests and scales. A dichotomous "true" or "false" response format was used in this questionnaire. The second questionnaire was a biographical inventory (BI) which contained items pertaining to experiences prior to entering the Navy.

##### Procedure.

Administration of the questionnaires was conducted by a civilian research psychologist in a classroom at the Naval Hospital and in an enclosed messing area on board the U.S.S. Kitty Hawk. Instructions given to the subjects made clear that responses to the items were for

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research purposes and would not become a part of the man's service record.

#### RESULTS AND DISCUSSION

The first objective of this study was to identify differences in the PHI and BI responses of men serving effectively in medical as opposed to deck and mechanical occupational specialties. Using the chi-square test, it was found that 39 of the PHI and 23 of the BI items discriminated significantly ( $p < .05$ ) between the men in these two groups. Representative items are shown in Table 1. The content of these items was, in general, consistent with occupational stereotypes. The response differences indicated that the HMs were generally more sensitive, tolerant, flexible, and independent than the deck and mechanical personnel. The HMs were also oriented toward interpersonal relationships, academic activities, and the attainment of long-term goals more frequently than were personnel in the deck and mechanical specialties. Furthermore, the HMs reported fewer personal regrets about things they had done and reported less cynicism about what the future holds for them than did the deck and mechanical group. Finally, the HMs were better educated and were from homes of a higher socio-economic status (as indicated by parents education and family income) than were the deck and mechanical personnel.

(Table 1 about here)

The next step in this study was to determine how well a combination of these 62 items could discriminate between the men working in these

two occupational groups. To do this, unit weights were assigned to significant alternatives and all items were reflected so that an affirmative response indicated a likelihood of membership in the HM rating group. A score was then computed on this combination of items for each man in the sample and the distributions of these scores for both occupational groups were compared. It was found that with a cut-off score of 27 on this scale, 92% of the HMs and 90% of the deck and mechanical personnel were correctly classified.

Finally, it was necessary to demonstrate that this non-cognitive measure could be a useful supplement to the cognitive measures already available to the classifiers. The aptitude measures presently used by classifiers are the General Classification, Arithmetic Reasoning, Mechanical, and Clerical tests. Scores on these tests, which were extracted from the records of each man in the sample, were entered into a multiple regression analysis with the composite scale scores and the dichotomous group-membership criterion. It was found that the aptitude scores alone could be used to predict occupational group with a multiple R of .58. When the non-cognitive scale score was added to the four aptitude scores, however, the multiple R was increased to .80 ( $F = 113.10, p < .001$ ). Aptitude alone then accounted for approximately 34% of the between-group variance whereas the combination of cognitive and non-cognitive measures accounted for 64% of the between-group variance.

The results of this exploratory study have indicated the value of using objective, non-cognitive measures as a supplement to current



classification procedures. Research is presently needed to identify additional non-cognitive characteristics, e.g., attitudes and values, which differentiate effective HMs and DTs from other Navy enlisted personnel. Furthermore, comparisons should be made between para-medical personnel and the personnel in occupational specialties other than those sampled in this study, e.g., the construction and clerical specialties. Effective first-term enlistees should also be included in future comparisons.

#### SUMMARY

Background history and personality questionnaires were administered to 93 effective HMs and 52 personnel serving effectively in deck and mechanical specialties. Sixty-two items discriminated significantly between the personnel in these two occupational groups. These items were combined into a single non-cognitive measure which was keyed to identify the HMs. By using regression analysis, it was found that this non-cognitive measure nearly doubled the accuracy of predicting group membership over what could be achieved with cognitive (aptitude) measures alone. As a methodological matter, these results provided support for the hypothesis that using objective, non-cognitive measures as a supplement to current classification procedures will bring about a significant reduction in the high rates of poor performance and psychiatric illness among Navy para-medical personnel.



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NOTE → -7-

## FOOTNOTES

<sup>1</sup> This study was supported by the Bureau of Medicine and Surgery, Department of the Navy, under Research Task MF51.524.02-BBBB. The opinions expressed are those of the authors and are not to be construed as necessarily reflecting the official policy of the naval service.

<sup>2</sup> The authors gratefully acknowledge the assistance of John A. Plag, Blair W. McDonald, Larry R. James, and Jerry L. Goffman in the implementation of this study.

Table 1

Representative items from the PHI and BI

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PHI:

- (-)<sup>a</sup> 16. I am in favor of a very strict enforcement of all laws, no matter what the consequences. (14.33)<sup>b</sup>
- (+) 19. I like to be able to come and go as I please. (3.84)
- (+) 28. In school I always looked far ahead in planning what courses to take. (5.13)
- (+) 50. I must admit I find it very hard to work under strict rules and regulations. (8.86)
- (-) 55. I enjoy doing things that involve quite a bit of physical exercise. (20.10)
- (+) 117. I like to be independent of others in deciding what I want to do. (4.59)
- (-) 134. People often talk about me behind my back. (7.73)
- (-) 147. With things going as they are, it's pretty hard to keep up hope of amounting to something. (5.86)
- (+) 177. I would like to devote my life to the service of others. (9.71)
- (-) 185. I have had more than my share of things to worry about. (15.76)
- (-) 190. I seem to do things that I regret more often than other people do. (8.34)

BI:

- 16. Before you turned 17 years of age, did you participate in any of the following activities? (Circle "Yes" or "No")
- (-) 11. Mending the cord of an electrical appliance (10.26)
- (-) 22. Hunting and butchering a small animal (rabbit, deer, etc.) (9.35)
- (-) 23. Using power tools for metal-working or woodworking (6.45)
- (+) 25. Attending a summer camp (13.60)
- (+) 30. Playing chess or checkers (8.53)
- (+) 31. Collecting stamps or coins (10.18)

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<sup>a</sup> keying of an affirmative response in scoring the non-cognitive scale

<sup>b</sup> chi-square statistic with one degree of freedom

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1. REPORT NUMBER 73-26 ✓	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) (U) Non-Cognitive Characteristics as a Basis for Guidance into the Navy Para-medical Specialties		5. TYPE OF REPORT & PERIOD COVERED
7. AUTHOR(s) Richard F. Booth & Anne L. Hoiberg		6. PERFORMING ORG. REPORT NUMBER
5. PERFORMING ORGANIZATION NAME AND ADDRESS Naval Health Research Center ✓ San Diego, CA 92152		8. CONTRACT OR GRANT NUMBER(s) (16) M4305, F51524 (17) M430507, MF51524002
11. CONTROLLING OFFICE NAME AND ADDRESS Naval Medical Research & Development Command Bethesda, MD 20014		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS M4305.07-3011DXB5
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) Bureau of Medicine & Surgery Department of the Navy Washington, DC 20372		12. REPORT DATE 17 March 1973
		13. NUMBER OF PAGES 8 (2) 11 pgs
		15. SECURITY CLASS. (of this report) UNCLASSIFIED
16. DISTRIBUTION STATEMENT (of this Report)  Approved for public release; distribution unlimited.		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Hospital Corpsmen Occupation Non-cognitive Characteristics Prediction		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Background history and Personality questionnaires were administered to 93 effective Hospital Corpsmen and 52 personnel serving effectively in Navy deck and mechanical specialties. Sixty-two items discriminated significantly between the personnel in these two occupational groups. These items were combined into a single non-cognitive measure which was keyed to identify the Hospital Corpsmen. By using regression analysis, it was found that this non-cognitive measure nearly doubled the accuracy of predicting group membership over what could be achieved with cognitive (aptitude) measures alone. As a methodological matter, these		

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